

Cable and Other Pay Television Services

(SIC 484)

SIGNIFICANT POINTS

- Administrative support and craft and repair occupations comprise most jobs.
- The majority of jobs are in large establishments.
- The need for employees in a variety of occupations will create openings for both high school and college graduates; opportunities will be best for applicants with technical skills and an understanding of the new telecommunications services provided by this industry.

Nature of the Industry

Establishments in this industry provide television and other services on a subscription or fee basis. These establishments include both cable networks and distributors. Cable networks produce or acquire television programming and deliver it to distributors. The distributors then transmit the programming to customers.

Cable networks produce some original television programs in their studios; however, much of the programming is acquired from the motion picture industry. (See the statement on motion picture production and distribution elsewhere in the *Career Guide*.)

Distributors of pay television services transmit programming through a variety of systems. Cable systems transmit programs over fiber optic and coaxial cables. Fiber optic cables are made of glass strands and can carry more information than conventional coaxial cables, made of wire. Other pay television systems include wireless and satellite systems. Operators of wireless systems transmit programming over the airwaves from transmission towers to customers' television antennas. Direct-to-home (DTH) operators transmit programming from orbiting satellites to customer receivers, known as satellite dishes.

Establishments in this industry generate revenue through subscriptions, special service fees, and advertising sales. Pay television systems charge installation and subscription fees to set up and provide service. They also charge fees for special services, such as the transmission of specialty pay-per-view programs; these are often popular movies or sporting events. Some cable networks sell advertising time during selected programs. Rates paid by advertisers depend on size and characteristics of the program's audience and the time of day the program is shown.

Subscription television services are widely used. In 1998, more than two-thirds of households with television sets received pay television services. Most of these customers subscribed to cable service; however, subscriptions to non-cable services are growing rapidly. The number of national cable networks has also been increasing. Between 1992 and 1998, this number doubled from 87 to 174 networks.

Changes in technology and regulation are transforming the industry. An important change has been the rapid increase in two-way communications capacity. Conventional pay television services only provided communications from the distributor to the customer. These services could not provide effective communications from the customer back to other points

in the system, due to signal interference and the limited capacity of conventional cable systems.

Encouraged by the increasing need for communications services, cable operators have implemented new technologies to reduce signal interference. The capacity of distribution systems has also increased, due to the installation of fiber optic cables and improved data compression. As a result, pay television systems now offer two-way telecommunications services, such as telephone service and high-speed Internet access. Cable subscribers can access the Internet by installing cable modems that connect customers' personal computers to the cable system.

The upgraded systems also facilitate the transmission of digital television signals. Digital signals consist of simple electronic code that can carry more information than conventional television signals. Digital transmission creates higher resolution television images, referred to as high definition television. It also allows the transmission of a variety of other information. This includes computer software, telephone directories, electronic newspapers, and any other information that can be translated into digital code.

The Telecommunications Act of 1996 reduced barriers to competition across all communications industries. As a result, operators of pay television systems are competing with telephone companies and public utilities to provide video, telephone, and high-speed Internet services. Consolidations have increased, as companies acquire facilities that allow them to offer their customers multiple services. Such combined offerings are popular with customers seeking to simplify their purchase of communications services. (A statement on telecommunications appears elsewhere in the *Career Guide*.)

Working Conditions

Working conditions in cable and other pay television services vary by occupational group. Most professional, clerical, and sales employees work indoors in comfortable, well-lighted surroundings. However, workers in technical, craft, and repair jobs must travel to various locations to perform installation, maintenance, and repair duties. These responsibilities often require outdoor work under a variety of weather conditions.

Workers who install pay television services travel to the customers' premises to perform the installation. Cable service installers must sometimes climb telephone poles or access underground cables to connect a customer's television set to the cable system. Antenna and satellite dish installers

must climb ladders and attach the receiving equipment to rooftops or the sides of houses.

Cable television line installers and repairers travel to locations in the cable system that are malfunctioning. They often travel in vehicles equipped with aerial buckets so they can do repair work on cables carried on telephone poles. Technicians responsible for monitoring signal quality sometimes work on outdoor equipment, such as transmission towers and satellite dishes.

Cases of work-related injury and illness in cable and other pay television services in 1997 were approximately 7.3 per 100 full-time workers, slightly higher than the 7.1 per 100 full-time workers throughout private industry. Rates of injury and illness in this industry were at this level, because many of the positions are craft jobs that pose hazards. These hazards can result in injuries from falls or electric shock from contact with high voltage power lines, for example.

Employment

Cable and other pay television services provided about 181,000 wage and salary jobs in 1998. Most jobs were in establishments that employed more than 50 workers (chart). However, just over half of the establishments in the industry employed fewer than 10 workers. Pay television establishments are found throughout the country, but jobs with large employers are concentrated in large cities.

Occupations in the Industry

Administrative support and craft and repair occupations comprise most jobs. The remaining employees are found in variety of occupations (table 1). In small cable establishments, employees are less specialized and may have a wide range of responsibilities.

Administrative support occupations. About a third of all jobs in this industry are in administrative support occupations. *Customer service representatives* talk with customers by phone or in person and receive orders for installation,

turn-on, discontinuance, or change in services. They often work at a computer, so they can quickly access customer records and authorize the provision of new services. As the industry begins to offer new services—such as telephone and high-speed Internet access—customer service representatives must also respond to technical questions about the operation of these services. Some customer service representatives are expected to sell services and may work on a commission basis.

Other administrative service occupations include *adjustment clerks* and *dispatchers*. *Adjustment clerks* investigate customer questions about pay television services, including billing questions. They determine responsibility for a customer complaint and notify customers of any adjustments, such as refunds or other changes to customers' bills. *Dispatchers* schedule work crews and service vehicles for installation of pay television service. Duties can include transmitting assignments via radio or telephone, and compiling statistics and reports on work progress.

Craft and repair occupations. Craft and repair occupations include about another one-third of the workers in the industry. The largest occupation in this group is *line installers and repairers*. These workers are known by a variety of titles, including *installer*, *line technician*, and *service or maintenance technician*. Line installers and repairers lay fiber optic and coaxial cable and install equipment, such as repeaters and amplifiers; this equipment maintains signal strength, as transmissions pass along the network. Maintenance and repair duties include periodic monitoring of the cable system to identify malfunctions. When a problem is detected, the technicians travel to the location of the malfunction and repair or replace the defective cable or equipment. Construction duties related to line installation, such as erecting supports and digging underground trenches, are often contracted to employees working in other industries.

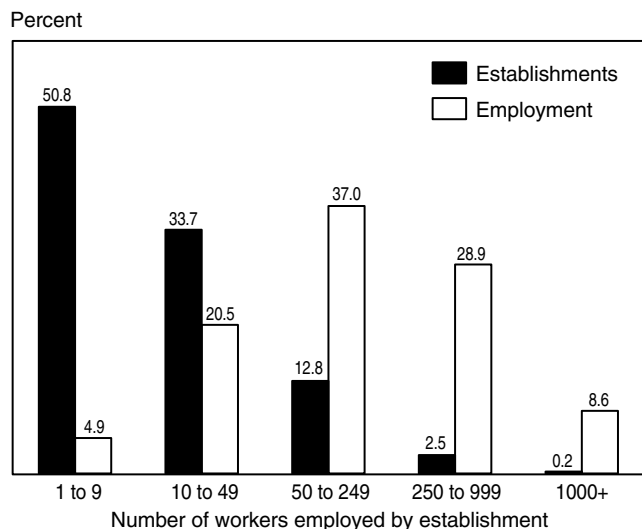
Installers travel to customers' premises to set up pay television service so customers can receive programming. Cable service installers connect a customer's television set to the cable serving the entire neighborhood. Wireless and satellite service installers attach antennas or satellite dishes to the sides of customers' houses. These devices must be positioned to provide clear lines of sight with satellite locations. (Satellite installation may be handled by employees of electronic retail stores that sell satellite dishes. Such workers are not employed by cable and other pay television services.)

Installers check the strength and clarity of the television signal, before completing the installation. They may need to explain to the subscriber how pay television services operate. As these services expand to include telephone and high-speed Internet access, an understanding of the basic technology and an ability to communicate that knowledge are increasingly important.

A new occupation found among cable operators is *cable modem installer*. These workers install cable modems, which allow customers to connect their personal computers to the cable line. Cable modem installers connect the modem to the cable line and configure the modem, so it is compatible with the customer's personal computer.

Other occupations. The remaining employees in this industry, approximately one-third, work in a variety of occupations.

Half of establishments in cable and other pay television services employ fewer than 10 workers



Source: U.S. Department of Commerce, *County Business Patterns*, 1997

Many are employed by cable networks that produce television programs, such as news or talk shows. *Camera operators* set up and operate television cameras to photograph scenes for cable television broadcasts. *Producers* plan and develop live or taped productions, determining how the show will look and sound. *Newscasters* analyze, interpret, and broadcast news received from various sources. (The motion picture industry produces many programs seen on cable television. Actors and directors working on these pre-recorded programs are not employed by cable or other pay television services.)

Electrical and electronics engineers design cable and wireless distribution systems for pay television services. Engineers determine the physical layout and requirements of the system, test equipment, solve operating problems, and estimate the time and cost of engineering projects. In wireless cable systems, engineers determine where operators need to install repeaters and towers in the distribution systems.

Network administrators set up and maintain systems of computer servers. These servers store customer data for billing and authorization purposes. Network administrators set up connections between servers, so customer service agents and other employees can efficiently access customer data for billing and authorization purposes. Other computer specialists include *computer engineers*, who work with the hardware and software aspects of systems design and development, and *computer support specialists*, who provide assistance and advice to users.

Market researchers and *sales representatives* at cable networks work together to sell advertising time to sponsors. Researchers analyze data about program audiences to identify audience characteristics, such as age and income. Sales representatives present this information to potential sponsors and attempt to sell advertising time.

Technicians and related support occupations include *broadcast and sound technicians*, also known as *cable technicians*. These technicians set up, operate, and maintain the electronic equipment used to transmit television programming. In cable services, they insure that incoming signals from satellites are clearly received and transmitted along cable lines to the customer. *Engineering technicians* assist professional engineers by designing, building, and testing electrical equipment. In cable networks that produce television programming, *master control engineers* ensure that the scheduled program elements—such as on-location feeds, pre-recorded segments, and commercials—are smoothly transmitted.

Training and Advancement

Many jobs in the cable and other pay television services industry do not require a college degree. Applicants with a high school diploma generally qualify for entry-level positions in administrative support or craft and repair occupations. However, a college degree is usually required for managerial and professional specialty jobs.

Customer service representatives require a high school degree and good communication skills. Familiarity with personal computers and a clear speaking voice are helpful. These workers receive on-the-job training to familiarize them with company services.

Installers require a high school degree, mechanical ability, and some technical knowledge. Newly hired installers receive on-the-job training and after several years may advance to line technician positions and work on complex maintenance and installation tasks. Cable modem installers should

have experience working with computers or an associate degree in computer information systems.

Table 1. Employment of wage and salary workers in cable and other pay television services by occupation, 1998 and projected change, 1998-2008

(Employment in thousands)

Occupation	1998 Employment		1998-2008 Percent change
	Number	Percent	
All occupations	181	100.0	27.0
Administrative support, including			
clerical	65	35.7	24.5
Office and administrative support			
supervisors and managers	5	2.7	24.0
Dispatchers	5	2.6	36.5
Order clerks	4	2.3	14.8
Adjusters, investigators, and			
collectors	3	1.9	38.3
Secretaries	3	1.5	1.5
General office clerks	3	1.4	28.7
Bookkeeping, accounting, and			
auditing clerks	2	1.0	3.9
Precision production, craft, and			
repair	58	32.1	26.5
Telephone and cable TV line installers			
and repairers	40	22.0	27.5
Blue collar workers supervisors	5	2.9	27.5
Telecommunications equipment			
mechanics, installers, and			
repairers	3	1.5	15.3
Executive, administrative, and			
managerial	17	9.5	25.1
General managers and top			
executives	5	2.5	23.8
Management support occupations ...	4	2.1	24.7
Advertising, marketing, promotions,			
public relations, and sales			
managers	2	1.3	27.5
Communication, transportation, and			
utilities operations managers	2	1.2	27.5
Marketing and sales	17	9.5	27.5
All other sales and related workers ..	14	7.8	27.5
Marketing and sales worker			
supervisors	2	1.3	27.5
Professional specialty	14	7.9	43.5
Actors, directors, and producers	4	2.0	53.0
Camera operators, television, motion			
picture, video	2	1.0	72.2
Technicians and related	8	4.5	24.8
Engineering technicians	4	2.0	27.5
Broadcast and sound technicians	3	1.9	27.5
All other occupations	1	0.7	23.0

Line installers and repairers working on large feeder and trunk lines require several years' experience with cable technology. A two-year associate degree is helpful, as is knowledge of basic electronics and good mathematical aptitude. Experienced line technicians may advance to broadcast technicians, operating and maintaining electronic equipment used to transmit cable programming.

The Society of Cable Telecommunications Engineers (SCTE) offers certification programs for a variety of technician positions. Applicants for certification must be employed in the industry and attend training sessions at local SCTE chapters.

Applicants must pass both written and hands-on exams to receive certification. Similar training for cable technicians is available from private trade schools and organizations.

Professional positions in pay television services normally require a college degree. Employees in program production, such as producers and news analysts, often receive degrees in communications or broadcast journalism. Camera operator positions may only require a vocational school degree or equivalent experience. Competition for program production positions is strongest in large metropolitan areas. As a result, entry-level applicants must often look for work in small markets. Internships while in school are recommended for employment in program production; experience gained at college television stations is also helpful.

Engineering positions require a college degree, usually in electrical and electronic engineering. Useful specializations include communications, radio frequency systems, and signal processing. Positions as computer specialists, such as computer network administrators, also require a college degree. These employees generally need knowledge of the Internet and familiarity with different computer operating systems. Positions as market researchers and sales representatives usually require a degree in business, communications, or related fields. Experience gained through college internships is also useful.

Earnings

Earnings in 1998 averaged \$564 a week in cable and other pay television services. This was higher than the average for all private industry; however, it was lower than average for communications industries as a whole (table 2.) Communications industries include telecommunications; radio and television broadcasting; and cable and other pay television services. Earnings in selected occupations in cable and other pay television services appear in table 3.

Table 2. Average earnings of nonsupervisory workers in cable and other pay television services, 1998

Industry segment	Weekly	Hourly
Total, private industry	\$442	\$12.77
Communications industries	706	17.30
Cable and other pay television services	564	14.14

Table 3. Median hourly earnings of the largest occupations in cable and other pay television services, 1997

Occupation	Cable and other pay TV services	All industries
Sales agents, advertising	\$14.21	\$14.16
Telephone and cable television line installers and repairers	11.56	15.32
Customer service representatives, utilities	9.83	12.55

Outlook

Employment in cable and other pay television services is expected to increase 27 percent between 1998 and 2008, faster than the 15 percent projected for all industries combined. Job growth will be driven by advances in technology that allow

the industry to expand beyond pay television services. The delivery of new telecommunications services—such as high-speed Internet access, telephone communications, and digital television programming—will increase demand for subscriptions to pay television services. Industry employment will grow, as companies expand and upgrade their equipment to efficiently provide these new services, and as they add to their marketing capacity to compete for increased customer demand. The need for employees in a variety of occupations should create openings for both high school and college graduates. Opportunities will be best for those with technical skills and an understanding of the new telecommunications services offered in this industry. Some jobs will be lost, as a result of consolidation in this industry; however, these losses will be more than offset by employment gains stemming from increased customer demand for additional or improved services.

A variety of occupations will experience employment growth. Operators of cable systems will need workers to lay fiber optic cable, deploy new technologies to increase line capacity, and maintain the growing networks of cable lines. As cable systems become more competitive, there may be overbuilding—new companies will lay cables adjacent to existing cables in an attempt to compete for service. These trends should contribute to an increase in the employment of line installers. Operators of wireless systems will increase the number of transmission towers to provide high capacity service to additional customers. To lay out and design these systems, these operators will increase their employment of engineers, especially those with knowledge of radio frequency systems.

Employment of installers who set up service also will increase, as residential and business customers are drawn to high-speed Internet access and telephone services. However, the development of software that allows subscribers to install and configure the modems themselves may eventually reduce the need for cable modem installers.

All distributors of pay television services—cable, wireless, and satellite—will need more customer service representatives. Customers are unfamiliar with the new services offered in this industry and need help understanding their operation. In this increasingly competitive industry, providing easily accessible customer service representatives will be a priority for all distributors.

Finally, the introduction of digital technology, resulting in an increase in the number of cable networks and pay television service providers, will create opportunities in program production occupations, such as producers, newscasters, and camera operators. As distributors of pay television services install networks of computer servers, employment of computer specialists, such as network administrators, will increase. Computer servers will not only track customer information for authorization and billing, but will also house digital information, such as movies that customers can access on demand. With additional networks attempting to sell advertising, the demand for market researchers and sales staff should increase, as well.

Sources of Additional Information

Information on the cable industry is available from:

- National Cable Television Association, 1724 Massachusetts Ave. NW., Washington, DC 20036.
Internet: <http://www.ncta.com>

- American Cable Association, One Parkway Center, Suite 212, Pittsburgh, PA 15220.
Internet: **<http://www.scbateam.org>**

For information on training and certification programs in the cable industry, contact:

- Society of Cable Telecommunications Engineers, Certification Department, 140 Philips Rd., Exton, PA 19341.
Internet: **<http://www.scte.org>**

Information on careers in fixed wireless telecommunications is available from:

- Wireless Communications Association International (WCA), 1140 Connecticut Ave. NW., Suite 810, Washington, DC 20036. Internet: **<http://www.wcai.com>**

For information on satellite television services, contact:

- Satellite Broadcasting & Communications Association, 225 Reinekers Lane, Suite 600, Alexandria, VA 22314.
Internet: **<http://www.sbca.com>**

Information on the following occupations can be found in the 2000-01 *Occupational Outlook Handbook*:

- Actors, directors, and producers
- Broadcast and sound technicians
- Computer systems analysts, engineers, and scientists
- Engineers
- Line installers and repairers
- Photographers and camera operators